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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/605,988 | 11/12/2003 | Daniel J. Wilkinson | 60680-1765 | 2987 |

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EXAMINER

PATEL, VISHAL A

ART UNIT PAPER NUMBER

3673

DATE MAILED: 08/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/605,988 | Applicant(s) WILKINSON, DANIEL J. | |
| | Examiner Vishal Patel | Art Unit 3673 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6-7 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Fall (US. 2,349,903).

Fall discloses a piston ring assembly (figure 4) for retention in a ring groove of a piston of an internal combustion engine. The piston ring assembly comprising an upper ring (10) for bearing against an upper surface of the piston ring groove, a lower ring (11) for bearing against a lower surface of the piston ring groove, a first shoulder recess (recess that retains the expander 18) about an inner periphery of the upper ring, a second shoulder recess (recess that retains the expander 18) about an inner periphery of the lower ring, a first portion of the upper ring is in contact with a corresponding first portion of the lower ring (where upper ring and lower ring 10 and 11 contact each other, see figure 4), a generally sinusoidal expander (18) having alternating apexes (apexes 15b of the expander 18 not showed in figure 4 but showed as example in figure 1), the generally sinusoidal expander received in a cavity formed by the first shoulder recess and the second shoulder recess and radial compression of the upper and lower rings induces axial expansion of the generally sinusoidal expander (this is the case since the upper ring, the lower ring and the expander have the same structure as claimed by applicants, further more upper and lower rings and the expander are split rings) for urging the upper and lower rings against the

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upper and lower surface of the piston groove. The piston ring assembly is capable of being positioned within a ring groove (groove as seen in figure 4 that retains the piston ring assembly) of a piston such that the axial expansion of the expander urges the upper ring against the upper surface of the ring groove and the lower ring against a lower surface of the ring groove (this is the case since the expander, the rings have the same structure as claimed by the applicant, intended use). The upper and lower rings have a lip (lip on outer surface of the upper and lower rings that have surface 10b and 11b). The apexes are generally flat and are supported by two adjacent leg members. The upper ring includes a first gap and the lower ring includes a second ring gap (the upper and lower rings are split rings). Fall teaches that the expansion of the expander in an axial direction is possible as noted on page 1, lines 33-37 due to compression of the upper and lower rings. The radial thickness of the expander (expander has a radial thickness starting from inside of the cavity and extending to the piston, example is shown in figure 1) is greater than the radial thickness of the cavity.

3. Claims 4, 9-10, 12-13, 15-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fall in view of Landon (US. 2,323,815).

Fall discloses the claimed invention except that the expander is generally sinusoidal having a set of upper apexes and a set of lower apexes, the upper apexes contact the second portion of the upper ring, the lower apexes contact the second portion of the lower ring, the ends of the expander forming a W-shape configuration and the apexes are supported by two adjacent leg members such that an angle defined by the adjacent leg members is about 16 degrees. Landon discloses a piston ring assembly having an upper ring and a lower ring, an expander between the upper ring and the lower ring, the expander being sinusoidal, where two upper

apexes contact the upper ring and the two lower apexes contact the lower ring, ends of the expander forming a split configuration (gap between ends of the expander, figure 1), ends of the expander forming a W-shape configuration and the apexes are generally flat and are supported by two adjacent leg members such that an angle is defined by the adjacent legs members. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the expander of Fall be replaced by the expander of Landon, to provide axial resilience for the expander, a substantial bearing area for the upper and lower rings and to minimize wear (page 1, lines 35-47 of Landon).

4. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fall and Landon.

Fall and Landon disclose the invention substantially as claimed above but fail to disclose that the angle being about 16 degrees. Discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the angle to be about 16 degrees to provide a mechanical expedience.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fall in view of Wuerfel (Re. 20,256).

Fall discloses the invention substantially as claimed above but fails to disclose that the upper and lower rings including plurality of projection on a mating inner surface to define a

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plurality of vents. Wuerfel discloses a piston ring assembly having an upper ring and lower rings, the upper ring and the lower rings having plurality of projection on a mating inner surface to define a plurality of vents (figure 1 or figure 5, where projections adjacent to 25 that form vent channels). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the upper and lower rings of Fall to have plurality of projection on a mating inner surface to form vents as taught by Wuerfel, to provide an oil control piston ring assembly and to provide drainage of excess oil (page 2, column 2, lines 6-7 of Wuerfel).

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fall and Landon as applied to claims above, and further in view of Wuerfel.

Fall and Landon disclose the invention substantially as claimed above but fail to disclose that the upper and lower rings including plurality of projection on a mating inner surface to define a plurality of vents. Wuerfel discloses a piston ring assembly having an upper ring and lower rings, the upper ring and the lower rings having plurality of projection on a mating inner surface to define a plurality of vents (figure 1 or figure 5, where projections adjacent to 25 that form vent channels). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the upper and lower rings of Fall and Landon to have plurality of projection on a mating inner surface to form vents as taught by Wuerfel, to provide an oil control piston ring assembly and to provide drainage of excess oil (page 2, column 2, lines 6-7 of Wuerfel).

Response to Arguments

7. Applicant's arguments filed 1/24/06 have been fully considered but they are not persuasive.

Applicants argument to Fall for not disclosing radial compression of the upper and lower rings induces axial expansion is not persuasive because as stated on page 1, lines 33-37, the expansion of the expander in an axial direction is possible as noted on page 1, lines 33-37 due to compression of the upper and lower rings. Because the split of the expander is capable of being made relatively small and large, axial compression of the expander is necessary to provide this. Furthermore due to large pressure placed on the upper or lower ring the expander would also compress in the axial direction of the piston ring assembly. Applicants' arguments presented on 7/5/06 have been considered but are not persuasive in view of the reasoning above.

As stated in the reference radial compression of the upper and lower rings induces axial expansion. Furthermore as stated above the reference of Fall teaches all the structural limitations of the claims.

Applicants' argument that Landon does not disclose that its flat control members can be radially compressed to induce axial expansion of the corrugated spacer member 3 is not persuasive because the expander of Landon is capable of being compressed to induce axial expansion. Furthermore Landon is used to teach that the expander is generally sinusoidal having a set of upper apexes and a set of lower apexes, the upper apexes contact the second portion of the upper ring, the lower apexes contact the second portion of the lower ring, the ends of the expander forming a W-shape configuration and the apexes are supported by two adjacent leg members such that an angle defined by the adjacent leg members is about 16 degrees.

Applicants' argument that combining the reference of Fall and Landon would prevent the piston ring of Fall not to function is not persuasive in view of the rejection above. Furthermore

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as stated in the reference of Landon that the expander is capable of being compressed to induce axial expansion (see column 1, lines 52-65 of Landon).

Applicants arguments to claims 5 and 11 is not persuasive because as stated above that applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is 571-272-7060. The examiner can normally be reached on 6:30am to 8:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on 571-272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VP
August 21, 2006

A handwritten signature in black ink, appearing to read "Vishal Patel", with a stylized flourish at the end.

Vishal Patel
Primary Examiner
Tech. Center 3600